UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,982	12/17/2001	William Joseph Armstrong	ROC920010097US1	4230

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EXAMINER
TO, JENNIFER N

ART UNIT	PAPER NUMBER
2195	

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/022,982	ARMSTRONG ET AL.
	Examiner	Art Unit	
	Jennifer N. To	2127	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _17 December 2001_.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is

closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-39_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-39_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _17 December 2001_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All   b)☐ Some *   c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage

application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1-39 are presenting for examination.

Claim Rejections - 35 USC § 101

2.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3.   Claims 38-39 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

4.   As per claims 38-39, "a program product" and "a program code", are not embedded in any type of memory and executable by a computer. Therefore, they are not producing a tangible result. In addition, as specified in the specification page 11, lines 12-17, a signal-bearing medium include a transmission-type medium. The program code embedded in a transmission-type medium does not produce a tangible result. Therefore, claims 38-39 are non-statutory.

Claim Rejections - 35 USC § 112

5.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter in which the applicant regards as his invention.

6.   Claims 2, 19-20, 22, and 38-39 are rejected under 35 U.S.C. 112, second

paragraph, as being indefinite for failing to particularly point out and distinctly

claim the subject matter which applicant regards as the invention.

The claim language in the following claims is not clearly understood:

i.   as per claims 2 (line 4) and 22 (line 4), it is uncertain whether

"some combination" means the combination of time measurement

and pointer data, and/or an invocation stack and pointer, and so on.

ii.   as per claims 19 and 20, it is uncertain whether "bucket/buckets"

refer to as "hash bucket/buckets". Appropriate correction is

needed.

iii.   as per claims 38 and 39, it is unclear whether "a signal bearing

medium" is a type of storage device. (i.e. memory etc...).

iv.   as per claim 39, lines 2-3, it is not clearly understood what type of

signal baring medium that can record program and also

"transmitting".

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

a.   A patent may not be obtained though the invention is not identically disclosed or
described as set forth in section 102 of this title, if the differences between the subject matter
sought to be patented and the prior art are such that the subject matter as a whole would
have been obvious at the time the invention was made to a person having ordinary skill in the
art to which said subject matter pertains. Patentability shall not be negatived by the manner in
which the invention was made.

8.   Claims 1-9, 18, 21-28, and 37-39 are rejected under 35 U.S.C. 103 (a) as

being unpatentable over Chatfield (U.S. Patent No. 4183083), in view of

Wygodny (U.S. Patent No. 6202199).

9.   As per claim 1, Chatfield teaches the invention substantially as claimed

including a method of analyzing program execution within an operating system of

a multi-program environment (col. 4, lines 21-22), comprising:

        accumulating diagnostic data pertaining to a program accessing a

resource (figs. 5a, 5b, 5c; col. 3, lines 9-13; col. 10, lines 49-55; col. 99, lines 40-

43);

        the execution of a program being predicated upon the program's access

to the resource (col. 7, lines 6-8); and

        storing the diagnostic data within a data structure at a location in the data

structure correlated to the resource (figs. 4, 7, 9, 11-12; col. 7, lines 3-14; col.

100, lines 46-52; col. 102, lines 47-50).

10.   Chatfield did not specifically teach a thread or multithreads. However,

Wygodny teaches multiple threads (abstract, line 12).

11.   It would have been obvious to one of an ordinary skill in the art at the time

the invention was made to have combined the teaching of Chatfield and

Wygodny because Wygodny 's threads would improve the granularity of

Chatfield's system by covering the threads environment.

12.   As per claim 2, Chatfield further teaches the diagnostic data includes data

selected from a group consisting of: a time measurement (col. 11, lines 35-36),

program code executed by the thread (col. 8, lines 22-23), an invocation stack

(col. 9, lines 42-43), and pointer data (col. 11, line 10).

13.   As per claim 3, Wygodny teaches that the data structure comprises a hash

bucket (col. 26, lines 52-54).

14.   As per claim 4, Chatfield further teaches that determining the resource

(col. 3, lines 13-17).

15.   As per claim 5, Chatfield further teaches that determining the resource

includes reading contents of a task dispatcher (col. 11, lines 8-17).

16.   As per claim 6, Wygodny teaches that storing information identifying the

resource (col. 5, lines 28-31).

17.   As per claim 7, Wygodny teaches that matching an identifier

corresponding to the resource to a correlative identifier corresponding to the data

structure (col. 16, lines 16-24).

18.   As per claim 8, Wygodny teaches that reassigning the identifier to a

second resource (col. 26, lines 47-49).

19.   As per claim 9, Wygodny teaches that assigning the correlative identifier

to the data structure (col. 26, lines 49-51).

20.   As per claim 18, Wygodny teaches that displaying the diagnostic data (col.

3, lines 13-18).

21.   As per claim 21, this is an apparatus claim that corresponds to the method

claim 1. Therefore, this claim is rejected for the same reason as claim 1 above.

In addition, Chatfield teaches the invention substantially as claimed including an

apparatus comprising:

        at least one processor configured to execute a plurality of threads (col. 4,

lines 44-49);

        a memory (col. 4, line 33); and

        program code resident in the memory and configured to execute on the at

least one processor (col. 8, lines 19-27).

22.   As per claims 22-28 and 37, these are apparatus claims that correspond

to the method claims 2-9 and 18. Therefore, these claims are rejected for the

same reason as claims 2-9 and 18 above.

23.   As per claim 38, this is a program product claim that corresponds to the method claim 1. Therefore, this claim is rejected for the same reason as claim 1 above.

24.   As per claim 39, Wygodny teaches the signal-bearing medium includes at least one of a recordable medium (col. 4, line 64) and a transmission-type medium (col. 4, line 65).

25.   Claims 10-17, 19-20, and 29-36 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Chatfield (U.S. Patent No. 4183083) in view of Wygodny (U.S. Patent No. 6202199), as applied in claim 1 above, and further in view of Wilner (U.S. Patent No. 5872909).

26.   As per claim 10, Chatfield and Wygodny did not specifically teach detecting a locking occurrence.

However Wilner teaches detecting a locking occurrence (col.3, lines 1-3).

27.   It would have been obvious to one of an ordinary skill in the art at the time the invention was made, to have combined the teaching of modified Chatfield and Wilner because Wilner teaches the step of detecting a locking occurrence would improve the integrity of Chatfield and Wygodny's system by detecting race conditions, deadlocks, CPU starvation and other problems related to task

interaction would be useful for quality analysis and testing (Wilner col.3, lines 1-9).

28.   As per claim 11, Wilner teaches calculating a time increment corresponding to a duration that the thread remains locked (col. 22, lines 43-45).

29.   As per claim 12, Wilner further teaches that storing the time increment within the data structure (col. 7, lines 19-25).

30.   As per claim 13, Wilner further teaches that recording the time corresponding to the locking occurrence (col. 22, lines 35-39).

31.   As per claim 14, Wilner further teaches detecting a removal of the lock (col. 3, lines 1-3).

32.   As per claim 15, Wilner further teaches that recording a time instance corresponding to the removal of the lock (col. 11, line 65).

33.   As per claim 16, Wilner further teaches recording program data relating to code executed by the thread prior to the locking occurrence (col. 21, lines 35-40).

34.   As per claims 17, and 36, Wilner further teaches that is retrieving the program data from an invocation stack (col. 20, lines 1-11).

35.   As per claim 19, Chatfield teaches the execution of the thread being

predicated upon the thread's access to the resource (col. 7, lines 6-8).

Wygodny teaches storing information within a bucket of a plurality of

buckets comprising a hash array, each bucket being correlated to the resource

(col. 2, lines 59-62; col. 26, lines 50-54).

Wilner teaches calculating a time increment reflective of a duration a

thread of the plurality of threads waits for access to a resource of the plurality of

resources.

36.   As per claim 20, Chatfield further teaches that reallocating the plurality of

resources to group the diagnostic data with a different scheme (col. 14, lines 19-

27).

37.   As per claims 29-36, these are an apparatus claim that corresponds to the

method claims 10-17. Therefore, this claim is rejected for the same reason as

claims 10-17 above.

Conclusion

38.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

Haddon et al. (U.S. Patent No. 6622155) teaches method for

monitor concurrency control in a distributed computing

environment.

Burrows et al. (U.S. Patent No. 6009269) teach method for

detecting concurrence errors in multi-threaded programs.

Shoumura et al. (U.S. Patent No. 5878262) disclose a program

development support system.

39.   Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Jennifer N. To whose telephone number is

(571) 272-7212. The examiner can normally be reached on M-T 7AM- 4:30 PM,

F 7AM- 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax

phone number for the organization where this application or proceeding is

assigned is 703-872-9306.

Information regarding the status of an application may be obtained from

the Patent Application Information Retrieval (PAIR) system. Status information

for published applications may be obtained from either Private PAIR or Public

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free).

Jennifer N To
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